Controller
A Super Performance Ignition Computer for Harley-Davidson® Motorcycles
Part # VT-128

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Warranty Information

This V Thunder® product is covered by a limited warranty that it is free from defects in material, workmanship and against excessive wear for a period of two (2) years. V Thunder®'s obligation under this warranty is limited to the repair or replacement of its product only. It is not responsible for incidental and consequential damages, property damage or personal injury damages to the extent permitted by law. (Some states do not allow warranty limitation, so the above may not apply to you.) There is absolutely no warranty on any parts used in racing applications, or on products that have been physically altered, improperly installed or maintained, used in improper applications, abused or not used in conjunction with the proper parts. To make a warranty claim, you must return the product, with a copy of your invoice, prepaid to: V Thunder® 3406 Democrat Road, Memphis, TN 38118 • 1-800-967-1066

CAUTION:

YOU MUST READ THIS ENTIRE MANUAL BEFORE ATTEMPTING TO PROGRAM.

The Controller Super Performance Ignition Computer is a fully programmable unit designed to replace the O.E. (original equipment) ignition system on 1970 and later Harley-Davidson motorcycles. The Controller features high tech programming capabilities with ease of operation and allows single or dual fire capabilities with the late model O.E. electronic pickup and rotor. A timing LED also indicates, 1) static timing via top dead center, 2) switch selectable programming mode 3) diagnostic information when programming the computer, 4) operational readiness.

NOTE: For full software programmability purchase V Thunder® ProFire Controller software and interface module part # VTPM2100.

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COIL AND SPARK PLUG CABLE RECOMMENDATIONS

We recommend replacing the O.E. coil with a coil delivering higher output. Coils used with the Controller must have at least 2 ohms primary resistance. If a lower ohm coil is desired, purchase of the V Thunder® ProFire software is necessary to change settings to accommodate the lower ohm coil.
The Controller will operate either in single or dual fire modes with one or two spark plugs per head. Do not use solid core or braided spark plug cables, they will cause interference with your ignition computer and accessories.

REMOVAL OF O.E. COMPONENTS

NOTE: Before working on any part of your motorcycle it is necessary to remove the ground cable from the battery / frame.

POINTS IGNITION - 1970 TO 1977 *

1. Disconnect wire going from breaker points to Coil negative terminal.
2. Remove ignition cover plate, gasket, and hardware.
3. Mark the position of breaker plate with the V notch. When you install the Controller, you should align the V notch in the same position which will set the timing close enough to start the engine. Remove and save the two standoffs and washers, then remove the breaker plate assembly, wiring, breaker cam, and advance assembly unit.
4. Replace with O.E. pickup part # 32400-80A, rotor # 32402-83 and adapter harness # 32408-90.

O.E. ELECTRONIC IGNITION - 1978 AND 1979*

1. Disconnect wires going from ignition module to coil.
2. Remove ignition cover plate and hardware. Remove ignition module.
3. Mark the position of the timer plate with the V notch. When you install the Controller, you should align the V notch in the same position, which will set the timing close enough to start the engine. Remove and save the two standoffs and washers. Remove the sensor, shield, timer plate, trigger rotor, and advance assembly.
4. Replace with O.E. pickup part # 32400-80A, rotor # 32402-83 and adapter harness # 32408-90.

* On 1970 - 1979 models, it will be necessary to select a location and fabricate a mount on the frame for The Controller.

O.E. ELECTRONIC IGNITION - 1980 AND LATER

1. Remove the O.E. ignition module only.

INSTALLATION OF THE CONTROLLER

NOTE: On 1980-1983 models, replace the original rotor with the newer style found on later models and on 1980-1987 models, replace the original sensor with the newer style found on later models.

DUAL FIRE MODE

1. Install the Controller ignition computer in position where the O.E. ignition module was and connect to the O.E. harness. (If you have purchased the correct part number, the connectors on the O.E. harness and the Controller will mate.)
2. Disconnect the purple/white wire to the V.O.E.S if not used. (We recommend using the V.O.E.S.)

SINGLE FIRE MODE

Note: Most single fire motorcycle coils have the terminals marked, one terminal for Coil positive and the other for Coil negative. Dual Fire motorcycle coils typically do not mark , so either may be used for negative or positive.1.

1. Connect the Controller loose blue wire to the Coil negative terminal on the coil for the front cylinder. (The O.E. harness coil negative wire will go to the rear cylinder coil.)
2. Use a jumper wire from the positive terminal of the front coil to the positive terminal of the rear coil.
3. Disconnect the purple/white wire to the V.O.E.S if not used. (We recommend using the V.O.E.S. The V.O.E.S. is normally an open circuit that closes and grounds the circuit input above 3-5 inches of vacuum. This increases total advance and should improve part throttle drivability and fuel economy).
4. Connect the Controller loose green wire directly to the tach wire if you are using a tach.
5. Reconnect battery ground cable.

(The Controller is grounded through the O.E. wiring harness.)

OPERATION OF THE CONTROLLER VIA MODE SELECTABLE SWITCHES

MODE 1

Operation in Mode 1 is the simplest programming mode. The position of the two rotary switches is used to set all operating parameters. Each unit is shipped from the factory with a Mode 1, curve #6 program installed. Switch "A" is used to set rev limit RPM and single/dual fire mode. Switch "B" sets the ignition parameters for up to 14 pre-programmed factory curves. Consult Table 1/Switch "A" for rev limit and fire mode settings. Table 1/Switch "B" shows ignition curve applications.

1. With the ignition switch in the "off" position set switches A and B to desired position. Power ignition switch on, LED will start blinking rapidly signifying successful programming. Turn ignition switch off and reset switches to the "O" position.
2. If stock sensor plate has been moved from original position, follow procedure for "static timing".
3. Power up ignition and start engine. If response is sluggish, use a more aggressive curve. If spark knock occurs, use a less aggressive curve.
4. If more precise control is needed use operation mode 2 to fine tune system.

(After initial start-up, LED will be constant on. If LED continues to blink with the engine running, this indicates a problem within the Controller. Shut the engine down and restart.)

TABLE 1: Mode 1 Switch Functions

Switch 'A'

SWITCH "A" POSITION	REV LIMIT RPM	FIRE MODE
0	6000	DUAL
1	6250	DUAL
2	6500	DUAL
3	6750	DUAL
4	7000	DUAL
5	7250	DUAL
6	7500	DUAL
7	7750	DUAL
8	6000	SINGLE
9	6250	SINGLE
A	6500	SINGLE
B	6750	SINGLE
C	7000	SINGLE
D	7250	SINGLE
E	7500	SINGLE
F	7750	SINGLE

SWITCH "B"	MIN. Advance	MAX Advance	IN AT	CURVE Type
		SWITCH "B"		
0	NOT VALID			
1	10	36	3500rpm	LEAST AGGRESSIVE
2	12	36	3500rpm	AGGRESSIVE
3	12	36	3500rpm	VERY AGGRESSIVE
4	12	36	3500rpm	MOST AGGRESSIVE
5	10	38	3000rpm	LEAST AGGRESSIVE
6	12	38	3000rpm	AGGRESSIVE (Factory Setting)
7	14	38	3000rpm	VERY AGGRESSIVE
8	14	38	3000rpm	MOST AGGRESSIVE
9	12	40	2500rpm	AGGRESSIVE
A	14	40	2500rpm	AGGRESSIVE
B	14	40	2500rpm	VERY AGGRESSIVE
C	14	40	2500rpm	VERY AGGRESSIVE
D	14	40	2500rpm	MOST AGGRESSIVE
E	14	40	2000rpm	MOST AGGRESSIVE
F	NOT VALID			

NOTE: The factory setting should be used for initial timing of the motorcycle. It must be used with the V.O.E.S.

MODE 2

Operation in Mode 2 allows the advanced user to adjust each operating parameter independently and with more resolution than Mode 1 operation. In Mode 2, Switch "A" selects the parameter to adjust, Switch "B" contains the new value, and the diagnostic LED blinks to provide user feedback. See Table 2 for a listing of programming options and Table 3 for values.

Programming New Values

1. With the ignition switch in the "off" position set switches "A" and "B" to zero.
2. Move the ignition switch to the "on" position.
3. Rotate switch "A" in the clockwise direction to the desired option #. Led should blink in a repeating pattern of 3 on / 1 off.
4. Rotate switch "B" to 1 or F to indicate sign + or - before actual programming. (Clockwise from "0" is a positive value, Counterclockwise from "0" is a negative value.)
5. Wait for led to stop blinking.
6. Rotate switch "B" to desired value to set actual program.
7. Set switch "A" back to 0, this burns the newly programmed value into memory.
8. New value will now be echoed back by LED (Example: 3 blinks = positive 3, 1 long blink + 3 blinks =negative 3).
9. After LED stops blinking, set switch "B" back to "0" to conclude programming operation.

Example: Program a rear cylinder offset of 3 degrees retard.

1. With the ignition switch in the "off" position set switches A and B to zero.
2. Move the ignition switch to the "on" position.
3. Rotate switch "A" in the clockwise direction to position 8 to select rear cylinder offset. Led should blink in a repeating pattern of 3 on / 1 off indicating that the program mode is enabled.
4. Rotate switch "B" to F to indicate a negative value. Wait for led to stop blinking.
5. Rotate switch "B" to position 3.
6. Set switch "A" back to 0.
7. New value should be echoed back by 1 long led blink (negative value), followed by 3 short blinks (value 3).
8. Set switch "B" back to 0.

TABLE 2: Mode 2 Switch Functions

Also See Table 3: Switch Settings and Value

	SWITCH 'A' POSITION	DESCRIPTION / RANGE
0	NORMAL/RUN	Switch A should always be returned here after reading or programming.
1	SINGLE/DUAL FIRE MODE	1 = Single Fire 2 = Dual Fire Single Fire mode fires each cylinder independently and requires 1 coil/cylinder. Dual Fire mode fires both cylinders together using a dual output coil (Factory).
2	MAIN REV LIMIT	-F = 4000rpm 0 = 6000rpm F = 8000rpm Maximum rpm before ignition cutoff. Factory setting 6000rpm.
3	MIN ADVANCE	0 = 10º F = 25º Idle spark advance. Factory setting 15º.
4	MAX ADVANCE	0 = 30º F = 45º Total spark advance. Factory setting 35º.
5	CURVE SHAPE	0 = slowest F = fastest Shape of spark curve between minimum and maximum advance. Factory setting "0".
6	VOES RETARD	0 = 0º F = 15º Amount of spark retard below 5" of manifold vacuum with V.O.E.S. Factory setting "5".
7	NITROUS ARMING RPM	0 = 0 RPM F = 8000RPM RPM setting for nitrous to enable. Factory setting 4. (4000 RPM)
8	+- REAR CYL TIMING	-F = retard 15º 0 = no correction F = advance 15º Offset correction for rear cylinder. Factory setting 0º.
9	START-UP IGNITION DELAY	0 = no delay 5 = 5 revolutions Number of engine revolutions before ignition enabled. Used with high compression to avoid backfire. Factory setting 0.
10	*START MODE EXIT RPM	-F = 0 rpm 0 = 500rpm F = 1000rpm Engine speed above which special start mode spark operation stops and normal operation begins. Should be below idle speed but above cranking speed. Factory setting 500rpm.
11	*START MODE ENTER RPM	-F = 0 rpm 0 = 500rpm F = 1000rpm Engine speed below which special start mode spark operation resumes and normal operation ends. Should be below start mode exit rpm. Factory setting 300rpm.
12	CAM SENSOR SYNC	-F = retard 15º 0 = no correction F = adv. 15º Offset correction for cam sensor installation error. Factory setting 0º.
13	AUX. RPM LIMIT	0 = 0 rpm F = 8000rpm Auxiliary RPM limit setting (2 step limiter). Factory setting 4. (4000 RPM)

14 *BASE DWELL 1 = 1mS F = 15mS

Coil saturation time at 12 volts. Higher values may increase spark energy depending on rpm, voltage etc. Lower numbers conserve battery power. Factory setting A.(10 mS)

15 NITROUS DELAY Range: 0 = 0 seconds F = 7.5 seconds

Delay for nitrous to kick in after RPM switch activates. Factory setting 8.

*** Denotes advanced programming option, Use factory settings in most cases. Changes to base dwell can result in damage to the Controller and/or coils**

Reading The Current Value

'Reading the Current Value' function gives the actual value of the "A" switch setting, i. e., X amount of advance, X amount of RPM, etc. To determine the value attached to the number of times the LED blinks, refer to Table 2: Mode 2 Switch Functions.

1. With the ignition switch in the "off" position set switches A and B to zero.
2. Move the ignition switch to the "on" position.
3. Rotate switch "A" in the counterclockwise direction to the desired option #. (While rotating the switch, do not stop for more than one (1) second before reaching the desired option number or the switch will take a reading.)
4. New value will now be echoed back by led blinks (Example: 3 blinks = positive 3, 1 long blink + 3 blinks =negative 3).
5. After LED stops blinking (ignition switch in "On" or "OFF" position), set switch "A" back to "0" to conclude read operation.

NOTE: For the "0" switch position, the LED will issue one long blink. For the "1" position the LED will issue one short blink.

Table 3 Mode @ Switch “B” Values

	MAIN REV LIMIT RPM	MIN. ADV. DEG.	MAX. ADV. DEG.	CURVE SHAPE	V.O.E.S. RET. DEG.	NOS ARM RPM	REAR CYL. TIMING DEG.	V.O.E.S. RET. DEG.	START MODE EXIT RPM	START MODE ENTER RPM	CAM SENS. SYNC. DEG.	AUX. RPM LIMIT RPM	BASE DWELL mS	NOS DELAY SEC.
-F	4000	-	-	-	-	-	15º RET	-	0	0	15º RET	4096	-	-
-E	4133	-	-	-	-	-	14º RET	-	34	34	14º RET	4224	-	-
-D	4266	-	-	-	-	-	13º RET	-	68	68	13º RET	4352	-	-
-C	4399	-	-	-	-	-	12º RET	-	102	102	12º RET	4480	-	-
-B	4532	-	-	-	-	-	11º RET	-	137	137	11º RET	4608	-	-
-A	4665	-	-	-	-	-	10º RET	-	171	171	10º RET	4736	-	-
-9	4798	-	-	-	-	-	9º RET	-	205	205	9º RET	4864	-	-
-8	4931	-	-	-	-	-	8º RET	-	239	239	8º RET	4992	-	-
-7	5064	-	-	-	-	-	7º RET	-	273	273	7º RET	5120	-	-
-6	5197	-	-	-	-	-	6º RET	-	307	307	6º RET	5248	-	-
-5	5330	-	-	-	-	-	5º RET	-	341	341	5º RET	5376	-	-
-4	5463	-	-	-	-	-	4º RET	-	375	375	4º RET	5504	-	-
-3	5596	-	-	-	-	-	3º RET	-	410	410	3º RET	5632	-	-
-2	5729	-	-	-	-	-	2º RET	-	444	444	2º RET	5760	-	-
-1	5862	-	-	-	-	-	1º RET	-	478	478	1º RET	5888	-	-
0	6000	10	30	SLOWEST	0	0	NO CORR.	NO DELAY	512	512	NO CORR.	6016	0	0
1	6133	11	31		1	550	1º ADV	1	546	546	1º ADV	6144	1	0.5
2	6266	12	32		2	1100	2º ADV	2	580	580	2º ADV	6272	2	1
3	6399	13	33		3	1650	3º ADV	3	614	614	3º ADV	6400	3	1.5
4	6532	14	34		4	2200	4º ADV	4	649	649	4º ADV	6528	4	2
5	6665	15	35		5	2750	5º ADV	5	683	683	5º ADV	6656	5	2.5
6	6798	16	36		6	3300	6º ADV	-	717	717	6º ADV	6784	6	3
7	6931	17	37		7	3850	7º ADV	-	751	751	7º ADV	6912	7	3.5
8	7064	18	38		8	4400	8º ADV	-	785	785	8º ADV	7040	8	4
9	7197	19	39		9	4950	9º ADV	-	819	819	9º ADV	7168	9	4.5
A	7330	20	40		10	5500	10º ADV	-	853	853	10º ADV	7296	10	5
B	7463	21	41		11	6050	11º ADV	-	888	888	11º ADV	7424	11	5.5
C	7596	22	42		12	6600	12º ADV	-	922	922	12º ADV	7552	12	6
D	7729	23	43		13	7150	13º ADV	-	956	956	13º ADV	7780	13	6.5
E	7862	24	44		14	7700	14º ADV	-	990	990	14º ADV	7808	14	7
F	8000	25	45	FASTEST	15	8250	15º ADV	-	1024	1024	15º ADV	7936	15	7.5

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MODE 3

Operation in mode 3 allows the ultimate in programmability. With our optional PC interface module and ProFire™ software, a desktop or laptop computer may be used to program totally independent front and rear timing curves, advanced acceleration modes, etc. Real time programming makes dyno testing faster, cheaper, and more efficient. For Mode 3 programming settings and options, you must purchase the V Thunder® interface and ProFire Software (Windows ® 95, NT, 3.1 compatible) part # VTPM2100.

STATIC TIMING PROCEDURE

1. Be sure the ignition switch is in the “OFF” position.
2. Remove front & rear cylinder spark plugs.
3. Ground both spark plug wires to the frame or motor to protect the Controller and prevent accidental start-up.
4. Remove the timer cover and loosen the breaker plate standoffs.
5. Remove the timing observation hole plug and rotate the engine until the TDC mark is dead center in the window. (Refer to the applicable O.E. service manual for proper identification of TDC mark on flywheel.)
6. Turn the ignition switch to the “ON” position.
7. Slowly rotate breaker plate back and forth. The Controller LED will switch from on to off at TDC.
8. Tighten breaker plate standoffs. Static timing is now set.

SETTING ADVANCE TIMING USING TIMING LIGHT

NOTE: Must be done with the V.O.E.S. connected

Connect a timing light to the front cylinder. Set the Controller to position 6 with Switch “B”. Run the engine at 2000 - 2500 RPM. Adjust breaker plate position until advance timing mark is centered in the observation hole. (Use a O.E. service manual for your model if you are not sure of the advance timing mark.) Fasten the standoffs and verify that timing has not shifted. (Some timing lights with a “dial” feature may not be compatible with the Harley® V-Twin odd fire engine.)

TROUBLESHOOTING

DO NOT install the Controller until problems with the original ignition system have been isolated and fixed. When you have determined that the original system and motorcycle are working properly, then install the Controller.

With the Controller installed, if the engine will not start, or runs rough or intermittently.

1. Check that timing LED lights up when ignition key is first turned on. If not, check for +12 volts on red wire from Controller.
2. Check that timing LED blinks while engine is cranked. If not, the Controller may not be operating properly.
3. If the timing LED blinks, but engine will not start, recheck all wire harness connections and igni tion coil(s).

CHECKING FOR SPARK

WARNING:
NEVER CRANK THE ENGINE WITH ANY SPARK PLUG WIRE DISCONNECTED.
GROUND ANY UNUSED SPARK PLUG WIRE.

PROGRAMMABLE RPM SWITCH WITH RETARD

The rpm switch can be used for nitrous oxide applications, as well as turbo & superchargers or high gear retard. The RPM switch combines a switch activated by RPM with a timing retard feature, both being programmable via the mode selectable switches or the V Thunder® ProFire Controller Software. Use of the RPM switch requires harness kit part # VTE2200.

INSTALLATION FOR RPM SWITCH (see figure 1)

1. V.O.E.S. wire to V.O.E.S. or any type trigger switch.
2. Use VTE2200 harness (with micro-relay) and any type master arm switch.

OPERATION

1. Set nitrous arming RPM delay to desired settings with mode selectable switches or software.
2. Enable the system by turning the master arm switch to on.

When the arming RPM is reached, the delay begins counting down, then the nitrous solenoid is opened. Once the engine RPM goes below the arming RPM, the nitrous solenoid will close. If you are using the auxiliary rev limit with the nitrous program, you will need to use a momentary contact type switch on the V.O.E.S. wire. As long as you keep the switch depressed, the auxiliary RPM will be in effect. Once you release the momentary contact switch, the timing will return to normal settings, then the nitrous program will begin if the master arm switch for the solenoid is on. Then the Controller will look for the programmed “Nitrous Arming RPM Mode” and when it is exceeded, the pre-programmed “Nitrous Delay” countdown starts. When the delay is satisfied, the nitrous solenoid will open and the timing will retard via the V.O.E.S. curve.

DEFINITION OF TERMS & COMMON USAGE

V.O.E.S. RETARD

The V.O.E.S., stock on Harley (V-Twins from 1983 to present, is used to retard the spark timing under high load conditions. The V.O.E.S. signal is a normally open switch, which when open, the ignition module responds by retarding the spark advance based on the value in the V.O.E.S. RETARD MAP for the current RPM. The switch will close when more than 4-5 inches of vacuum is evident, thereby eliminating the retard. With the Controller, the user may program the correct amount of V.O.E.S. retard in 500 rpm increments. With the factory Controller settings, there is a flat correction of 5º for all rpm ranges. Improvements in fuel economy and response may be found by increasing both base advance and V.O.E.S. retard so that full load timing is unaffected, but light load timing is increased. NOTE: High Vacuum=Light Load

ACCELERATION ADVANCE

This corrections mainly intended for high performance engines which can have very high acceleration rates. Electronic ignition systems calculate engine rpm and position by measuring the time period between 2 known positions. Under steady state conditions (steady rpm and throttle position), this method is highly accurate. Acceleration introduces an error which tends to retard spark timing. Also, an engine which is accelerating can tolerate an increased spark advance which would normally cause detonation under steady state conditions. The increase in spark advance under transient conditions (temporary changes in rpm and throttle position) can make the engine more responsive. It should be noted, however, that large corrections at low acceleration rates can cause erratic behavior in the engine.

ACCELERATION DWELL

This correction increases coil saturation time under acceleration conditions to ensure the highest spark energy is available. The amount of correction required will vary for different coils.

BASE DWELL
This correction is used to maintain a balance between spark energy and power consumption (coil and ignition module temperature). As battery voltage is increased, dwell requirement decreases. Also, different coils require different dwell for maximum energy output. This allows flexibility for different applications. EXTREME CAUTION must be used when making changes to the base dwell, as damage to the coil and/or ignition computer can result. DO NOT change this setting without factory guidelines.

CAM SENSOR SYNC
This function corrects for a misaligned sensor plate. When using a timing light, if you do not see the advance timing mark in the timing inspection hole, you must static time the engine first. If you do see the advance mark in the timing inspection hole, but it is not centered in the window, you can use the cam sensor sync function to correct the problem without moving the sensor plate. A negative value can correct for advance timing and a positive number in this field will correct for retarded spark. Another advantage of the Cam Sensor Sync is in helping to eliminate starter kickback. When you have determined that the overall advance curve is where you are deriving the best performance, but you are having a starter kickback problem, the following steps can be taken. Physically retard the cam sensor plate a few degrees at a time (3-4º maximum) until the bike starts without kickback. With the bike running, reset the timing with a timing light, but use the Cam Sensor Sync to get the advance mark dead center in the timing inspection hole. The bike will now crank with a slightly retarded spark, but when the motor fires the Cam Sensor Sync will take out the retarded spark.

CAM SENSOR OFFSET
All hall effect and optical sensors have a delay time between the trigger action (rotor wheel notch) and the output signal. This delay is usually negligible at low rpm, but may not be at higher speeds. If spark timing retards at high speed, even though programmed timing is constant, then a larger value may correct the problem.

REV LIMIT RATE
This is the “softness” of the rev limit. Larger values will make a smoother rev limit. If the value is too high, the rev limiter may not stop engine acceleration and the rpm will overshoot the desired limit. Higher performance engines will require smaller values.

IGNITION DELAY
For kickstart bikes this value should be “0”. Higher values may prevent starter kickback by allowing engine inertia to build before firing the ignition. Each increment equals on flywheel revolution.

START MODE EXIT RPM
Under start-up conditions, the ignition stimulates ‘point ignition’, which produces highly accurate but retarded spark timing (no calculations, just precise timing). Start Mode Exit RPM is the RPM at which the transition from ‘start’ mode occurs. This should be set just above the lowest idling speed. This helps to ensure that the bike starts properly and will keep the bike from stalling at very low RPM. EXAMPLE: With the Start Mode Exit RPM set at 500 RPM, the motor has to turn at least 10 revolutions at 501 RPM or greater for the exit start mode to and enter run mode. With the Start Mode Enter RPM set at 350 RPM the motor must drop below 350 RPM to return to the start mode.

START MODE ENTER RPM
Once the engine has entered “Run” mode, if the engine speed drops below this rpm, it reenters “Start” mode to prevent stall from occurring. This value should normally be set between 100-200 rpm less than “Start Mode Exit Rpm”.

AUXILIARY REV LIMIT
Mainly for drag racing, this is a secondary rev limit which is actuated by grounding the V.O.E.S. wire. When the ground is disconnected from the V.O.E.S. line, the normal rev limit takes over again. Typically, a momentary contact switch should be used.

NITROUS ARMING RPM
RPM that must be exceeded to enable the nitrous solenoid.

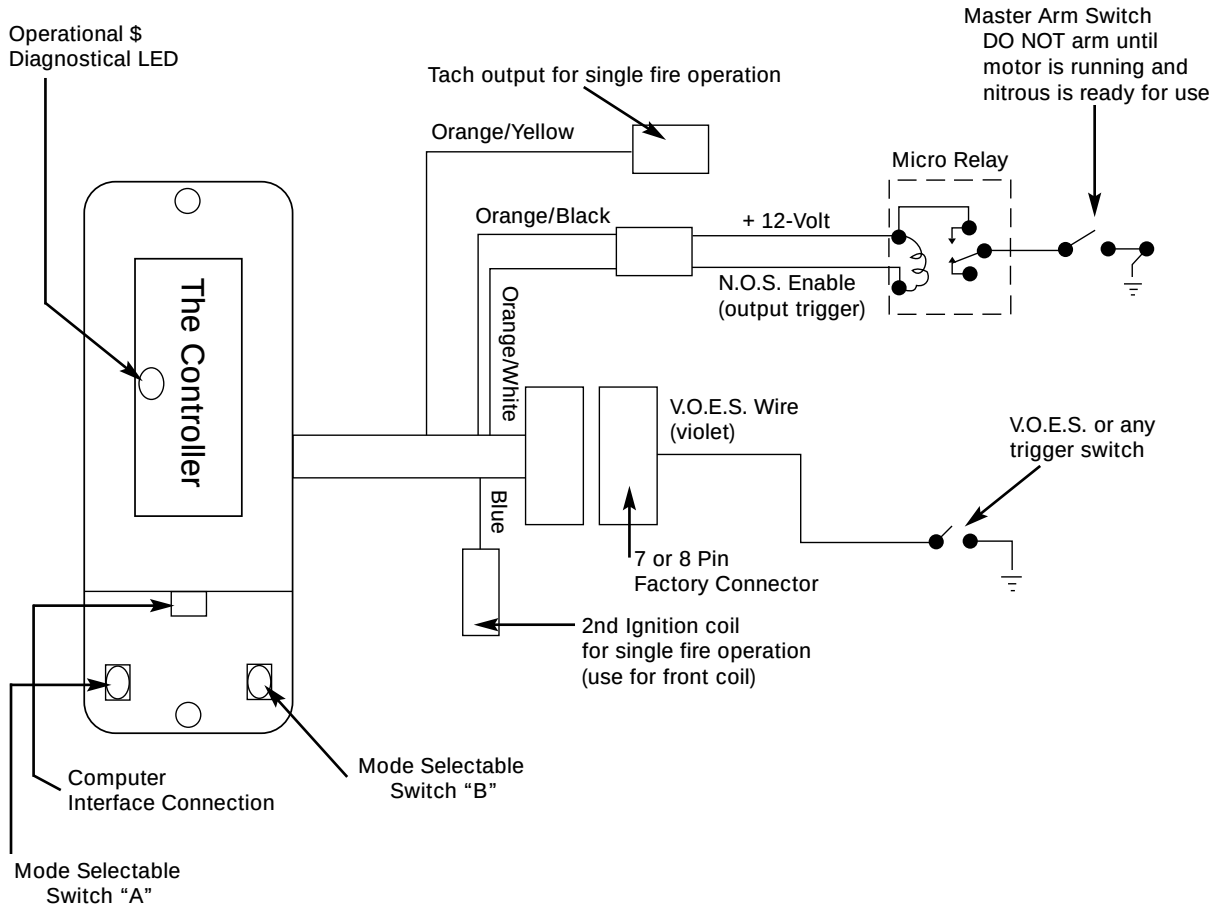
NITROUS DELAY
Time delay before nitrous solenoid activation. The delay timer starts after V.O.E.S. line is ungrounded and after the nitrous arming rpm has been exceeded.
NOTE: Both the nitrous program and the auxiliary rev limit can be used simultaneously as one does not interfere with the other's operation.

CAUTION: Nitrous oxide maximizes the combustion in the cylinder head chamber, thereby increasing the engine's ability to produce large amounts of horsepower. This increased performance may reduce engine life and if used without proper safeguards could result in injury.

WARNING: Nitrous oxide should only be used for off-street applications with proper safety equipment.

NOTE: Introduction of nitrous oxide into the combustion chamber produces an extreme "lean condition." This may be addressed by using a fogger with a nitrous and fuel circuit, a duel feed fuel valve, and a low pressure fuel pump.

FIGURE 1



NOTES